
Name of Organization: Cleveland State University

Type of Organization: College or University

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Project Title: Riparian Biodiversity Assessment in Urban Cleveland

Project Category: Habitat (Ecological) Protection and Rest

Rank by Organization (if applicable): 0

Total Funding Requested (\$): 150,245 **Project Duration:** 2 Years

Abstract:

Cities harbor urban green spaces that are under-valued and little studied with respect to biodiversity conservation management and planning. These areas can be significant from several perspectives, such as (1) habitat for unknown or relictual populations of important species; (2) stop-over habitat for migratory birds; (3) corridors that create larger networks of urban wildlife habitat and may connect urban habitats to outlying rural areas; (4) repositories and entry points for invasive and exotic species. Biodiversity assessments in urban habitats can provide insight into ecosystem integrity and indicate potential for restoration. Moreover, biodiversity assessments involving schoolchildren and community residents can prove invaluable as tools for promoting environmental literacy and cultivating "pride-of-place" among communities with little access to more "natural" areas. Finally, studies of urban ecosystems will help to identify links among anthropogenic stressors and biodiversity.

Our group, which is a consortium of academic institutions, governmental and private agencies, will conduct biodiversity assessment studies in several, small urban stream watersheds tributary to Lake Erie in the Cleveland metropolitan area. These will include streams within the Cuyahoga River Area of Concern. We will use standard inventory protocols and existing data to quantify the presence and relative abundance of several key taxa, e.g., plants, fish, lepidoptera, spiders, amphibians, birds, and mammals. In addition, we will institute "school-yard" and voluntary community-based inventory programs to involve schoolchildren and the general public in data collection. Data will be entered into a GIS database, and made widely accessible through a web site, seminars, and presentations.

Geographic Areas Affected by the Project

States:

<input type="checkbox"/> Illinois	<input type="checkbox"/> New York
<input type="checkbox"/> Indiana	<input type="checkbox"/> Pennsylvania
<input type="checkbox"/> Michigan	<input type="checkbox"/> Wisconsin
<input type="checkbox"/> Minnesota	<input checked="" type="checkbox"/> Ohio

Lakes:

<input type="checkbox"/> Superior	<input checked="" type="checkbox"/> Erie
<input type="checkbox"/> Huron	<input type="checkbox"/> Ontario
<input type="checkbox"/> Michigan	<input type="checkbox"/> All Lakes

Geographic Initiatives:

<input type="checkbox"/> Greater Chicago	<input checked="" type="checkbox"/> NE Ohio	<input type="checkbox"/> NW Indiana	<input type="checkbox"/> SE Michigan	<input type="checkbox"/> Lake St. Clair
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Primary Affected Area of Concern: Cuyahoga River, OH

Other Affected Areas of Concern:

For Habitat Projects Only:

Primary Affected Biodiversity Investment Area: Not Applicable

Other Affected Biodiversity Investment Areas:

Problem Statement:

Urban wildlife habitats have been largely ignored with respect to their overall effects on regional biodiversity in the Lake Erie and Cuyahoga River watersheds. However, these areas are growing and constitute a primary cause of habitat loss and water quality degradation in the region. Yet, restoration to pre-urbanized conditions is an unattainable ideal in many areas. Conversely, where restoration is possible, the creation of new wildlife habitats in or adjacent to urban areas raises additional questions. For example, will wildlife species attracted to these restored areas benefit, or will such restored habitats act as "ecological traps" by exposing wildlife to anthropogenic stressors? Moreover, biodiversity inventories provide guidance as to which areas are most valuable and most likely to benefit from restoration. Therefore, an understanding of the role of urban green spaces and their potential for sustainable biodiversity in urban settings is a critical need in the Lake Erie basin and throughout the Great Lakes.

We propose to conduct biodiversity assessments in the greater Cleveland metropolitan area, focusing on several riparian corridors, including portions of the Cuyahoga and Rocky Rivers, Euclid Creek, Doan Brook, Mill Creek, and several others. Using standard inventory protocols, and existing datasets, we will inventory key in-stream aquatic and upland terrestrial taxa that are likely to be (1) important to ecological function, and (2) viewed as significant or desirable from the public perspective. These results will be entered into a GIS-database that will allow us to identify areas that are particularly valuable with respect to biodiversity, and investigate patterns of covariation among biodiversity and land use/land cover, population density, and socio-economic indicator variables.

Proposed Work Outcome:

We will establish teams to inventory several key taxa within riparian corridors in the Cleveland Metropolitan Area. Taxonomic specialists participating in the inventory teams will be drawn from several regional institutions and agencies, such as Cleveland State University, John Carroll University, University of Akron, Kent State University, Hiram College, College of Wooster, the National Park Service at the Cuyahoga Valley National Recreation Area, the Ohio Biological Survey, the Northeast Ohio Regional Sewer District, Cleveland Metroparks Zoo, and the Cleveland Museum of Natural History. Substantial amounts of data relevant to this project already exist through on-going and past projects at the institutions listed above and routine monitoring for regulatory purposes.

Further, we will establish "school yard" inventory programs to involve schoolchildren in the monitoring of lepidoptera, amphibians, and birds in their neighborhoods. This program will be established through cooperation with the Cleveland Public Schools and several school districts in the high density inner-ring suburbs of Cleveland. Similarly, we will establish voluntary, community-based inventory programs through cooperation with local conservation and environmental education organizations, e.g., Cuyahoga Valley Environmental Education Center, Nature Center at Shaker Lakes, etc. These

activities will be accomplished through a series of workshops to train in-service teachers and community coordinators, who will then run the program within their various schools and communities.

The outcomes for this project will include: (1) a web accessible GIS-database providing locations and relative abundance metrics for inventoried taxa, and (2) a web-based atlas, modeled on the Chicago Wilderness Biodiversity Atlas, that will provide information on distribution and natural history of various taxa, the effects of urbanization on habitats and biodiversity, the history of urbanization in the region, current regional "hot spots" of urban sprawl, and likely future changes in biodiversity in the Cleveland area. Also, the atlas will present recommendations for conservation planning in the region.

Project Milestones:

Dates:

Project Start / Create Web Site	10/2000
Organizational Workshop	11/2000
Finalize Inventory Protocols	12/2000
Identify Inventory Sites	12/2000
Training Workshops	01/2001
Conduct Inventory (through 9/2002)	03/2001
Complete Atlas	09/2002
Project End	09/2002

☒ Project Addresses Environmental Justice

If So, Description of How:

Through its urban focus, this project will do much to promote environmental justice. By involving inner-city communities, which are largely minority and economically disadvantaged, this project will cultivate "pride-of-place" and provide the sorts of information necessary for residents to participate in the environmental restoration of their communities.

☒ Project Addresses Education/Outreach

If So, Description of How:

Education and outreach will be central activities of this project. Training workshops will be held to train teachers and community residents in basic biodiversity inventory protocols, which they will then carry back to their classrooms and communities. In addition, project scientists will make frequent presentations to schools and community groups throughout the project period. Further, the project web site and the natural history atlas will be created in consultation with educators and community representatives so that these resources are as accessible and useful to the general public as possible. Publications resulting from the project will be distributed widely among legislators, governmental agencies, private organizations, schools, and interested individuals in the region and throughout the Great Lakes.

Project Budget:

	Federal Share Requested (\$)	Applicant's Share (\$)
Personnel:	55,500	5,000
Fringe:	8,835	0
Travel:	2,000	0
Equipment:	0	0
Supplies:	6,500	5,000
Contracts:	40,000	0
Construction:	0	0
Other:	3,000	0
Total Direct Costs:	115,835	10,000
Indirect Costs:	34,410	0
Total:	150,245	10,000
Projected Income:	0	0

Funding by Other Organizations (Names, Amounts, Description of Commitments):

The following represent "in-kind" contributions in support of this project:

Cleveland State University has invested \$138,000 to establish the "Cuyahoga River Watershed Project" (CRWP), an interdisciplinary effort to investigate the ecology of urban landscapes in northeastern Ohio. The CRWP has established a fully equipped field station with biological collecting, monitoring, and inventory equipment, and data management facilities. In addition, many of the inter-institutional collaborative relationships that support the proposed work originated with the CRWP. Further, considerable amounts of data relevant to this project have been collected by the CRWP. These include fish, amphibian, and bird surveys in several of the watersheds targeted by the proposed project. Considering technician salaries and supplies expended for these data, this in-kind contribution amounts to at least \$20,000.

Portions of the work done on this project will be accomplished by graduate and undergraduate student workers conducting research for credit. We expect to use at least four students for 120 hours each. If this time is valued at a standard hourly wage for student workers (\$8), this contribution is \$3840.

John Carroll University contributes approximately \$5,000 per annum for field station operations.

Total "in-kind" contribution = \$28,840

Additional funds will be sought from public agencies and private foundations for additional activities related to this project. For example, we will seek funding for publication and distribution of a hard-copy version of the natural history atlas.

Description of Collaboration/Community Based Support:

This project will benefit from a number of relationships that have developed in northeastern Ohio to promote research, education, and conservation in the regional urban ecosystem. First, the Cuyahoga River Watershed Project has established a consortium of institutions that cooperate in research focussed on the ecology of urban northeastern Ohio. CRWP participants include Cleveland State University, John Carroll University, Heidelberg College, Kent State University, University of Akron, and the Northeastern Ohio Regional Sewer District. In addition, Cleveland State University, John Carroll University, and the National Park Service have joined in partnership to establish the Woodlake Environmental Field Station in the Cuyahoga Valley. The National Park Service in the Cuyahoga Valley National Recreation Area has contributed in excess of \$100,000 through renovations of the farm house now housing the Woodlake Environmental Field Station. This site and its residence and laboratory facilities will be utilized in this project. Further, the University of Akron recently joined this group through a National Science Foundation grant (\$24,000) that has funded a collaborative effort for strategic planning for research and education in urban ecology at the Woodlake Station and University of Akron's Bath Field Station.

Administrative support and expertise will be provided by the Center for Environmental Science, Technology, and Policy, and the Center for Excellence in Risk Analysis at Cleveland State University. GIS support will be provided by the Northern Ohio Data & Information Service, the Urban Center, Cleveland State University.

Faculty participating in this project have on-going research and/or education programs conducted through support of or in cooperation with a variety of agencies and institutions, including the Lake Erie Protection Fund, Nature Center at Shaker Lakes, Cleveland Metroparks Zoo, National Park Service, and Cleveland Public Schools.